

Command and Control Loop Relationships: A Brief Study of Marine Corps Decision-making  
Process and Boyd's Loop

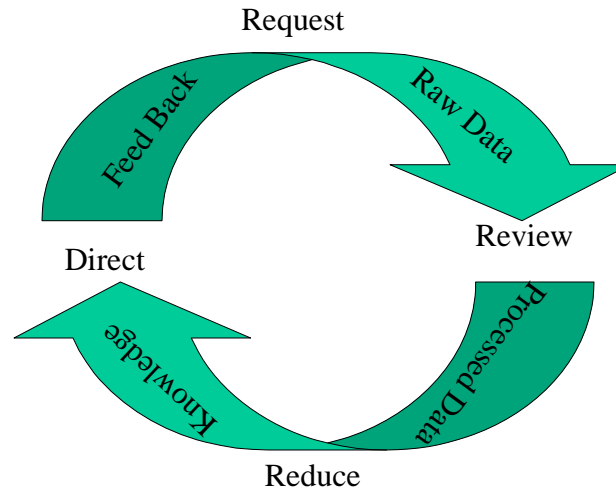
Subject Area Electronic Warfare (EW)

EWS 2006

Command and Control Loop Relationships:  
A brief study of Marine Corps decision-making process and Boyd's  
loop  
EWS Contemporary Issues Paper  
Submitted By Captain PJ Dunbar  
To  
Major RA Martinez, CG2  
February 7, 2006

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE <b>2006</b>		2. REPORT TYPE		3. DATES COVERED <b>00-00-2006 to 00-00-2006</b>	
4. TITLE AND SUBTITLE <b>Command and Control Loop Relationships: A Brief Study of Marine Corps Decision-making Process and Boyd's Loop</b>				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>United States Marine Corps, Command and Staff College, Marine Corps University, 2076 South Street, Marine Corps Combat Development Command, Quantico, VA, 22134-5068</b>				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>Same as Report (SAR)</b>	18. NUMBER OF PAGES <b>11</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			

# Command Loop Information Flow



The relationship between command and control is a decision making process that ultimately results in a command and a maneuver process that results in action (control). The Marine Corps has used the Observe, Orient, Decide and Act (OODA) loop developed by Colonel John R. Boyd USAF (Ret) to provide a conceptual model of decision-making. The use of OODA loop "...is not meant to provide a complete description of the various phases and interactions."<sup>1</sup> The OODA loop serves as a basic model for the control element of command and control equation. A second loop is run by the information management officer and feeds the maneuver loop developed by Boyd. The Boyd loop and the information process loop create tempo for the commander and friction for the enemy.

---

<sup>1</sup> MCDP 6; p 142, para.4

## **COMMAND AND CONTROL DEFINED**

To understand the relationship between command and control it is imperative to define the process of command and control as well as the qualifying actions that link the two. MCDP 6 and JP 1-02 provide a definition. The Command Function is defined as:

"... the authority and responsibility for effectively using available resources and for planning the employment of, organizing, directing, coordinating, and controlling military forces for the accomplishment of assigned missions."<sup>2</sup>

The function of command in C2 relates to a decision making process that ultimately results in the initiation of a control process. "The commander commands by deciding what needs to be done and by directing or influencing the conduct of others."<sup>3</sup> This implies a decision making process, not the maneuver process described by Boyd's OODA loop. This decision making process has four main functions: a request for information, a review of the information, a reduction of information, and a direction (command) based on the decision. The intermediary of these process points is the refinement of information by the commander and the feedback received from the subordinate directed to act.

The information officer helps the commander and his staff request, review, and reduces information. The information management officer is "... a designated special staff officer, if

---

<sup>2</sup> JP1-02 as amended through 9 May 2005 p. 100

<sup>3</sup> MCDP 6; p 40, para.1

one is not designated he is the chief of staff or executive officer.”<sup>4</sup> The commander may choose anyone as his information management officer, as long as the Marine picked to fill the IMO billet understands the full mission of the command at the chief of staff or executive officer level. Additionally, the IMO must pass information through all the staff sections and the commander. Staff officers should no longer be dual hated to fulfill this mission because of the amount of information available and required by a commander and his staff necessitates a staff officer that can provide all of his attention to the process of filtering data. The IMO facilitates the four sections of the commander’s decision-making process.

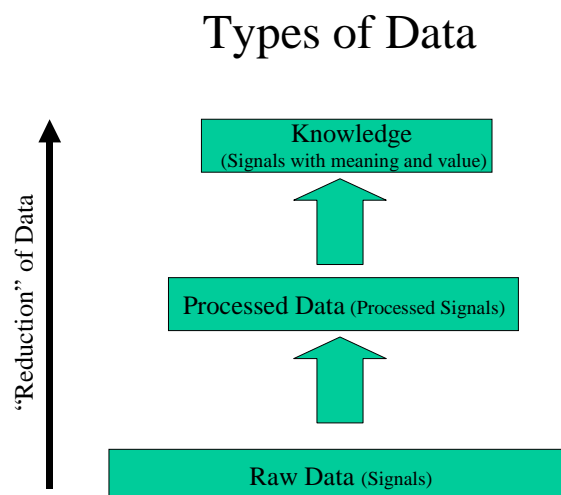
#### **STEP 1: REQUEST**

The first part of the command loop is the request for information; this may come from a feedback from a previously issued directive, an intuitive assessment of the mission or higher’s intent, or deliberate analysis of the mission. It is important to note that this first point in the decision making process is founded in

the recognition and collection of raw data. The raw data

---

<sup>4</sup> MCWP 6-22 p. 1-8



gathered are the "...signals which have not been processed."<sup>5</sup> During this phase of the loop, the IMO coordinates raw data directly related to Commander's and staff implicit and explicit information requirements. This can be as complex as coordination and collection of overflight data provided by UAV or fixed wing assets or as simple as providing JOPES data. The IMO tracks requests for information, collects raw data, and gives the data to the commander and his staff. The next step of the command loop converts raw data "...through a system of operations designed to convert raw data into useful information,"<sup>6</sup> also known as processed data.

## **STEP 2: Review**

Review can be complex or simple depending on how long it takes to convert the data. When the commander has reviewed all the data available, on hand within the time he can, he must accept the eighty-percent solution and move to the reduction phase. At this phase, the IMO aids the commander by developing information management techniques, tips and procedures.

The IMO adds operational tempo through efficiently processing and prioritizing the data based on the commander's critical information requirements (CCIR). In short, by planning and organizing the information flow to suit the commander, the IMO

---

<sup>5</sup> MCDP 6 p. 66

<sup>6</sup> JP 2-0 p.80

creates tempo by providing the information for the commander and his staff. Once the IMO has provided the information for review, the commander and his staff will begin to move towards one or more COA's and begin to reduce the information to produce a single COA.

### **STEP 3: Reduction**

During the reduction phase, the IMO provides updated information to the commander and his staff. The commander and staff can then focus the new information through filters to yield knowledge. These filters can be as complicated and thorough as the Marine Corps Planning Process to filters as simple as METT-TSL. The amount of detail a commander may require during the reduction phase is limited only by time. An IMO cannot use the reduction phase to search for a state of perfect information for the commander. Just as there is no state of perfect information, wherein all the information required to act exists, a perfect state of missing information does not exist. Using TTP an IMO must bring any new data that fills in the mitigated risks accepted by the commander and the staff. The IMO must maintain current and accurate information at this level. Battlefield knowledge is based on fractional, evaluated, or analyzed information. Due to its very nature this knowledge can only be as good as the filters, processes, and experiences used to analyze it. It is the responsibility of the IMO to keep the

commander and staff aware of any emerging data that would reverse or change a COA.

The IMO has also been receiving focused requirements from the commander and the staff, prompting him toward a single COA and the resulting branches and sequels that may be involved. Before the commander and staff decide on a COA, the IMO must discard information requirements related to non-essential COA. This will ensure that the commander and his staff can concentrate on information that supports the COA only, not other COA's.

#### **STEP 4: Direction**

During the direction phase the commander has used the knowledge gained in the previous phase and made a decision to initiate action and provide his subordinates with his intent. The requirements of the IMO intensify at this point as the IMO must manage the information flow through filtered information systems (C4I systems) and non-filtered information (human based). It is at this point that the commander initiates Boyd's loop and directs subordinates. Both loops begin to turn and begin to act upon one another through staff, and C4I systems creating tempo.

This feedback is generally where the information overload occurs. Feedback restarts the decision loop after a subordinate commander, has reported back to the senior commander supplying the senior with raw data, information, or knowledge. In this method the two loops are synergistic: as the commander receives



more feedback the faster he can make a decision. Conversely, the faster the commander can make a decision faster the data, information and knowledge will flow back as the engagement, battle, or campaign shapes. The IMO must intuitively shape the information required by the commander and staff. Additionally the IMO must balance the feedback from a particular course of action is timely, accurate, and specific to the mission.

### **Control Functions**

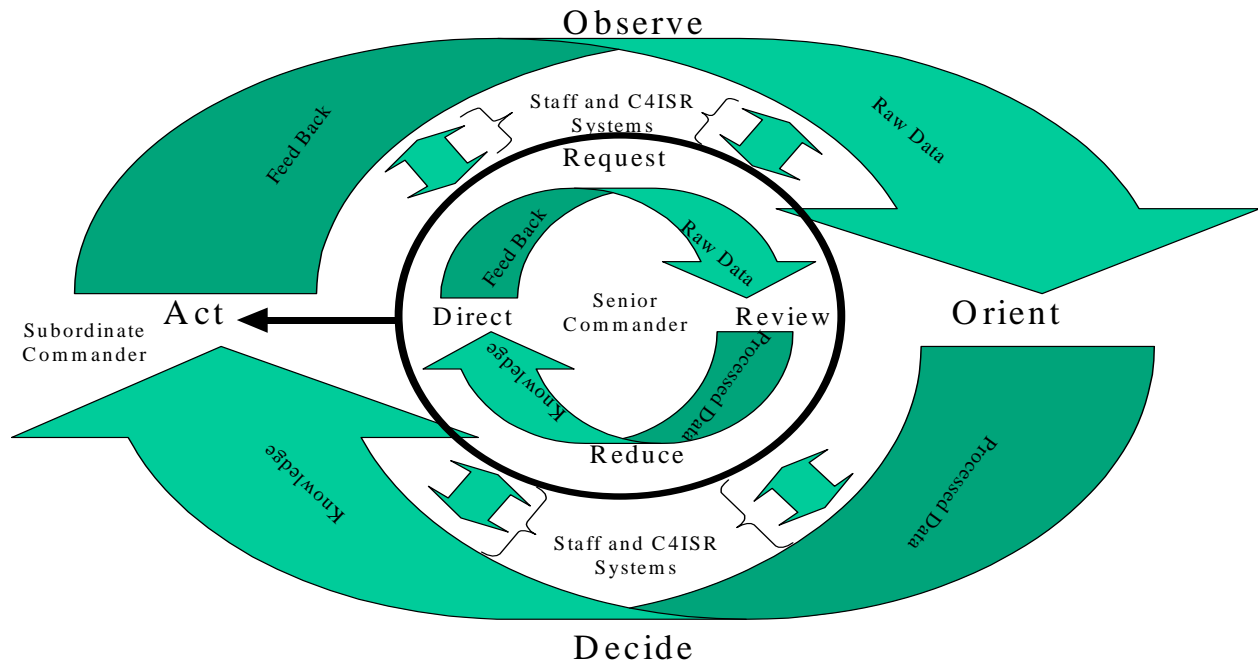
The Control Function is defined as "...Authority that may be less than full command exercised by a commander over part of the activities of subordinate or other organizations [...] 3. Physical or psychological pressures exerted with the intent to assure that an agent or group will respond as directed..."<sup>7</sup>.

Control is the authoritative arrangement of subordinate or other agencies to include organic capabilities. The commander controls a subordinate through directing action to be taken. It is at this point that the Boyd model begins to reflect the nature of control. The subordinate commander acts through the control loop, and the senior commander exerts decentralized control. Control is a maneuver element that is focuses directly on maneuver in relation to striking enemy weakness. The subordinate commander in relation to the enemy orients personnel and equipment and observes their effectiveness. Additionally he

---

<sup>7</sup> JP1-02 as amended through 9 May 2005 p.119

# Command and Control Loop



decides what feedback to provide higher; the appropriate actions to take in relation to the enemy; acts upon higher's orders and in the absence of orders or guidance acts as the senior commander intends.

The Commander's staff and C4I systems serve as conduits for feedback between the two commanders. The commander's staff and C4I exist to provide effective decision-making information for the senior commander and clear guidance and control for the subordinate. Information is provided under a supply-push relationship with future operations cells, standing SOP's and OPPLANS and other C4I systems. Information is provided through demand-pull systems through current operations, the common operating picture, and other real-time C4I systems as available. By providing feedback to the both senior and subordinate commander's the staff ensures that both commanders can shape the

battle and make changes to the plan to exploit critical enemy vulnerabilities.

The Marine Corps has used the OODA loop developed by Colonel John R. Boyd USAF (Ret) as a conceptual model of decision-making. However that loop in relation to command and control provides only a model of control. To gain a full picture of maneuver warfare a second decision loop exists that describes the relationship of senior commander to subordinate. The relationship that exists between Command and Control can be described as a decision making process that ultimately results in a directive (command) and a maneuver process that results in action (control). These two loops create a synergy that creates time for the senior and subordinate commander and friction for the enemy.

## Bibliography

Coackley, Thomas P., *Command and control for War and Peace*, (National Defense University Press 1992).

Lind, William S., *Maneuver Warfare Handbook*, (Westview Special Studies in Military Affairs, 1985).

Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, (Washington D.C. Chairman of the Joint Chiefs of Staff; Amended through May 9 2005), 119, 100.

Joint Publication 2-0, *Doctrine of Intelligence Support to Joint Operations*, (Washington D.C. Chairman of the Joint Chiefs of Staff; March 9 2000), 80.

U.S. Marine Corps, *Marine Corps Operations: MCDP 1-0*, (Washington DC: Secretary of the Navy, 2001), 7-23.

U.S. Marine Corps Doctrinal Publication 6, *Command and Control: MCDP 6*, (Washington DC: Secretary of the Navy, 1996), 40, 66, 142.

U.S. Marine Corps Doctrinal Publication 6, *Communications and Information Systems: MCWP 6-22*, (Washington DC: Secretary of the Navy, 1998), 1-8.